

SINC - LINK

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TORONTO TIMEX - SINCLAIR USERS CLUB

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Message from the Vice-President

We're well into 1988 already. Our T4 slips are in our hands and none of us like the numbers. The Olympics are over and spring is around the corner.

Timex-Sinclair computers are still with us and so are a small but dedicated group of hard-and-software developers. These programmers, inventors and vendors help us to keep going. They need your support. If you keep buying their products, they'll keep on making new products and we all want to see that!

For info on vendors speak to the secretary or the Newsletter Editors.

Got questions about your computer? Send them to the Editors and we'll publish them and the answers (we hope!).

Remember our Swap and Sell Meet is upcoming on May 4th. Got something to trade or sell? Bring it!

Do you have or want to see a particular demonstration? Contact the Activities Director. He'll help.

The Editors want your Newsletter submissions and any new info you come across.

Help us to make the Newsletter more Newsworthy and interesting!

That's all for now and remember,
"KEEP ON POKING"

MTERM II
Modifications for the LARKEN DD System
by G. Chambers
14 Richome Court
Scarborough, Ont M1K 2Y1 CANADA

When I started to put MTERM II onto the LARKEN system I had some ideas of what I wanted to do. Primarily I wanted to be able to make disk saves of the buffer at any time while on-line. I soon found that as MTERM was constituted, this was impractical. MTERM as presently constituted cleared out any BASIC program and variables that were initially present. Thus my idea of having a BASIC program ready to perform the disk-save immediately upon an exit from MTERM was not possible. I have overcome this by a few judicious POKEs into MTERM, plus some unique ideas in a companion BASIC program. The following notes describe the changes and their purpose.

I found that one of the first things that MTERM does upon initialisation is to look at the system variables VARS and PROG. It uses these values to clear out the BASIC program and variables, also to help in determining the ongoing buffer status.

Bytes which do this are located at 54035/37, 54043/45, and 61165/66. I modified the program by POKEing new values into several MTERM addresses, as follows.

54034,33: 54035,12: 54036,123

54043,33: 54044,12: 54045,123

54523 to 54537, POKE all zero's in these addresses.

The first six POKEs cause MTERM to set the start of the buffer space. This figure could be set anywhere; it is simply a trade-off between buffer size and BASIC program size. Initially, I considered having MTERM look at the system variable E-LINE, however I found that this became corrupted whenever I entered a direct command. I fastened on an arbitrary value of 31500 since I felt that with a disk-save routine in place, maximizing buffer space was less important than having sufficient space for the BASIC program. This sizing will allow a LARKEN-modified LOADER V to be used.

I found that with this, even though the BASIC remained untouched, the program variables were being wiped out. Looking around, I found a block of MTERM code (54523/54537) that appeared to do this. I simply wiped it out with no apparent ill-effect.

Addresses 61164/65 store the used/free buffer status. They are loaded with the values found in addresses 54044/45 (i.e. the starting address of the buffer) at initialisation, and are incremented as the buffer fills. I have made use of this in LINE 22 of the BASIC program to determine the size of the block of data to be saved.

There is a "load buffer" option in the BASIC program. This allows a file to be loaded into the buffer space. You may determine the file length prior to loading it, and then input this information when requested. On the other hand you can simply enter your estimate of the buffer length, and this will be satisfactory for many situations.

These addresses 61164/65 can be useful in another way. If, for example, you inadvertently erase the buffer while in the Buffer Menu mode it is possible to restore it. Option 4 in the menu allows you to insert an arbitrary buffer length. This will change the "buffer used/free" pointer in MTERM so that one can view and/or save the buffer.

There are a number of features about the program which are worthy of explanation. LINE 100 contains POKEs to addresses 23662/63. Its purpose is this. Usually, if you execute a RAND USR from a BASIC program and return, the BASIC program will continue from where you left it. However with MTERM this is not the case. You will come out to an OK report at the bottom of the screen. I was unable to find the MTERM code which caused this. Failing that, I solved the dilemma by POKEing a number into the system variable OLDPPC (address 23662/63) corresponding to the LINE number where I wish to continue in the BASIC program. Then, when I exit from MTERM it is simply necessary to press the C key (CONT), and the ENTER key, to find myself back into the running BASIC program at the spot where I want to be.

The BASIC has a couple of other things about it which are of interest. If one accesses MTERM by a RAND USR 54016 the program is reinitialized with the buffer set as cleared. However, if it is desired to re-enter MTERM without disturbing the state of the buffer then one can use RAND USR 54089. This option has been included in the BASIC at LINES 30 and 32.

There probably will be occasions when several successive buffer SAVES will be required during the same download. The BASIC contains an arrangement whereby the name of the saved buffer remains the same, while its suffix is incremented. Where the initial SAVE has a suffix of "Ca", the suffix in subsequent SAVES will be incremented as "Cb", "Cc", etc.

Although we have shown an original BASIC program here for use with MTERM there is every reason to imbed these program ideas into LOADER IV or LOADER V. They will work there in the same way, and provide for the additional features of these programs.

Also, even without a disk system, these features may prove to have some merit, and are worth considering.

In adapting this program you will have to watch carefully when you tamper with the makeup of LINES 20, 21, 32, and 100. What you are trying to do is direct the return of the computer to the appropriate line and statement number, and this can be tricky.

Note that the program is designed to be used in the LARKEN AUTOSTART mode. That is, you should save it to disk with a GOTO 3.

Q>REM Modified MTERM II for the LARKEN disk system by G. Chambers

```

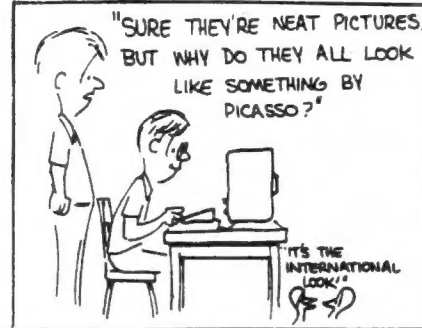
2 GO TO VAL "9"
4 CLEAR VAL "31499": RANDOMIZE USR VAL "102"
6 CLEAR VAL "54015": RANDOMIZE USR VAL "100": OPEN #4,"dd"
7 PRINT #4: LOAD "mterm2.C1"CODE
9 LET g$="buffer"
10 LET g=VAL "150": LET q=VAL "97": LET f=VAL "20": LET o=NOT PI: LET i=PI/PI: 80
ORDER o: PAPER o: INK VAL "7": CLS : PRINT
TAB VAL "10";"MTERM II""TAB PI+PI;"MA
IN MENU:"""TAB PI+PI;"1) RUN MTERM""TAB
PI+PI;"2) LOAD BUFFER""TAB PI+PI;"3) NA
ME A BUFFER FILE""TAB PI+PI;"4) RESTORE
BUFFER""TAB PI+PI;"5) SCAN DISK FILE":
GO SUB VAL "13": IF LEN z$<>i OR z$<"1" O
R z$>"5" THEN RUN
12 GO TO VAL z$*f
13 INPUT "Your Choice? "; LINE z$: RETUR
N
20 GO SUB g: RANDOMIZE USR VAL "54016"
21 CLS : CLS : LET q$=CHR$ q: PRINT AT V
AL "10",NOT PI;"Save buffer to disk?(Y/N)
""File Name is "; FLASH PI/PI;g$+"."C"+q
S: FLASH o: PAUSE o: IF INKEY$="n" OR INK
EY$="N" THEN GO TO VAL "24"
22 LET n=PEEK VAL "61164"+VAL "256"*PEEK
VAL "61165"-VAL "31500"
23 LET q$=CHR$ q: LET q=q+PI/PI: PRINT #
4: SAVE g$+"."C"+q$CODE VAL "31500",n
24 IF INKEY$<>"" THEN GO TO VAL "24"
25 CLS : PRINT AT VAL "10",NOT PI;"Press
ENTER if you wish to clear the buff
er""Otherwise press any other key": PAUS
E o
30 IF CODE INKEY$=VAL "13" THEN GO TO V
AL "20"
32 GO SUB g: RANDOMIZE USR VAL "54089"
40 CLS : PRINT TAB 9;"LARKEN/MTERM II""
""Insert disk containing program to
be loaded & press a key": PAUSE o: CLS :
PRINT #4: CAT ""; PRINT ""Full name of
File (9 char$): "; INPUT "Filename? "; L
INE n$
44 PRINT #4: LOAD n$CODE VAL "31500"
48 INPUT "Enter the file length"" (appr
ox. if not known);l: LET l=1+VAL "31500"
: IF l>VAL "53966" THEN LET l=VAL "53966"

```

```

50 POKE VAL "61164",1-256*(INT (1/256)):
POKE VAL "61165",INT (1/256)
55 CLS : GO TO VAL "32"
60 CLS : INPUT "Buffer Name (6 Chars) ";
g$: GO TO VAL "10"
80 IF Z$="4" THEN GO TO 48
100 CLS : PRINT AT VAL "17",NOT PI;"Enter
full Disk File Name ": INPUT g$
110 PRINT #4: PRINT g$
115 GO TO 10
150 POKE VAL "23662",VAL "21": POKE VAL "
23663",NOT PI: RETURN

```



REPAIR
A Larken utility

Last issue of the newsletter had a program listing called REPAIR, which would reconstruct a Larken disk directory. since that time it has come to my attention there are several corrections that should be made to it. They are as follows:

1. Delete lines 330 and 340, 510
2. Modify lines 350 and 480 per listing below.
3. Add lines 501, 502, and 503.

The changes have the following effect:

Line 480 adds OUT 84,8: PAUSE 3 to allow the drive motor to get up to speed prior to reading a track. Required with the 1960 bytes/track interface.

The remaining line changes load an empty directory into the buffer just prior to it's being filled with the data for a new directory. It's original location at 350 did not serve it's intended purpose.

G.F.C.

```

350 PRINT AT 10,0;d$;AT 14,2;"Insert defe
ctive disk""TAB 2;"and press any key to
start": PAUSE 0

```

```

480 IF n<79 THEN OUT 84,8: PAUSE 3: RAND
OMIZE USR nexttrack
500 REM Placing Used/Free track reco
rd in buffer (Track 0)

```

```

501 PRINT AT 10,0;d$;AT 14,2;"Install a n
ewly-formatted disk""TAB 6;"and press an
y key": PAUSE 0

```

```

502 POKE trac,0: RANDOMIZE USR settrack
RANDOMIZE USR loadbuf

```

```

503 PRINT AT 10,0;d$;AT 14,2;"Now re-inse
rt defective disk""TAB 2;"and press any
key to continue": PAUSE 0

```

BOB'S NOTEBOOK

PRINTER INTERFACES

Here is a table of features etc for two printer interface software programs which I have used with my printer interface board. One is Peter Hacksel's LPRINT which came with my board and the other is one called PRCODE.

	LPRINT	PRCODE
Start address.....	65000	64256
Length.....	500	1111
Pokes (to set up) 26703	0	5
26704	254	251
65535	0	--
Line Length set.....	--	64259
TAB n	n spaces	as for
	added	TS2068
Printer Control Codes	note a	note b

note a: Use POKE 65535,1; then standard codes for printer; then POKE 65535,0;

note b: Use POKE 64256,0; then standard codes for printer; then POKE 64256,1;

* true ASCII character set
& 2068 character set

LPRINT Disadvantages: Cannot set line length;
TAB is non standard & awkward to use.

Advantages: Will ignore INVERSE, PAPER etc in listings.

PRCODE Disadvantages: Only one I can see;
During LLIST it will stop working properly when it comes across INVERSE, PAPER etc (even if they are imbedded in a string)

Advantages: Line Length can be set;
TAB seems to work OK.

Both programs are relocatable. I use my reloc8.Cc program to do this (copy in club library). Note that PRCODE runs at 5 bytes after the start address (ie, 64261 with a start address of 64256). So when you relocate it to a new address, you may want it to start running at an address which is a multiple of 256 (so that you only have to rePOKE 26704 to change from 2040 to PRCODE); in that case make the code start address 5 less than the "run" address.

***** MORE PEEKING AND POKING ABOUT

In my earlier article on PEEKING and POKING, I mentioned the difficulty in peeking out variable data when it exists in floating point notation. If you had not forced your numeric variables into the INT (integer) mode when you used TIMACHINE, you ended up with these floating point numbers. Then, if you wanted to use these values in some other program, you had to use a routine to convert them to decimal numbers. For example, the decimal number 6524 = 141 75 224 0 0 in floating point. The application that presented itself came about when I wanted to print the data in my BUDGET program onto the big printer. I found that the data was (and had to be) in floating point because the dollars AND cents had to be conserved for calculation. Without going into the theory then, here is the routine that I used to do the job. It will work with the TIMACHINE compiled code version of Budget which I have provided to the club library. This routine will print four different spreadsheets onto the big printer using Condensed type mode. I used LPRINT (see above) and the sheets took almost the full width of the printer paper, ie, 8-1/2 inches. Without condensed mode, you would have to print each sheet in two or more parts and this would really defeat the purpose of the routine as it would be simpler to just use the 2040 printer with the original Budget program.

```

7000>RESTORE 7050
7010 DIM t$(19,10): FOR i=1 TO 19: READ t$(i): NEXT i
7030 RETURN
7050 DATA "GROCERIES","CLOTHING","VACATION","HOUSING","
TAXES","HYDRO","GAS","PHONE","HIS","HERS","TRANSPORT",
"GIFTS","LEISURE","CAPITAL","DENTAL","MEDICAL","LIQUOR",
"MISC."
7060 DATA "TOTALS">>
8000 OUT 127,15: POKE 23658,8: INPUT "Select Spreadshet...""P=Planned A=Actuals""Q=Planned YTD B=Actuals YTD"; LINE i$
8002 POKE 26704,254: POKE 65535,0
8003 LET tflag=0
8010 OPEN #2,"p"
8015 PRINT ("PLANNED" AND i$="P")+("ACTUALS" AND i$="A")+("PLANNED YTD" AND i$="Q")+("ACTUALS YTD" AND i$="B")
8020 PRINT "      JAN      FEB      MAR      APR
      MAY      JUN      JUL      AUG      SEP      OCT
      NOV      DEC      TOTAL"
8030 IF i$="P" THEN LET first=50987: LET last=52066
8035 IF i$="Q" THEN LET first=54497: LET last=55517
8040 IF i$="A" THEN LET first=52067: LET last=53146
8043 IF i$="B" THEN LET first=55577: LET last=56597
8045 LET cat=1
8050 FOR i=first TO last STEP 60

```



```

8060 PRINT t$(cat):: LET tot=0: FOR j=0 TO 55 STEP 5
8070 LET a=PEEK (i+j)
8080 LET e=PEEK (i+j+1)
8090 LET d=PEEK (i+j+2)
8100 LET c=PEEK (i+j+3)
8110 LET b=PEEK (i+j+4)
8120 GO SUB 8190
8130 LET tot=tot+VAL n$
8140 PRINT n$:" ":
8150 NEXT j
8160 IF i$="P" OR i$="A" THEN PRINT tot
8162 IF i$="Q" OR i$="B" THEN PRINT " "
8163 IF tflag THEN RETURN
8165 LET cat=cat+1
8170 NEXT i
8172 LET tflag=1
8175 LET i=(54257 AND i$="P")+(57767 AND i$="A")
8177 LET cat=19: GO SUB 8060
8178 PRINT
8180 POKE 26704,5: GO TO 200
8190 IF a=0 THEN GO TO 8240
8200 DIM n$(8)
8210 LET num=256*c+d
8220 IF e=255 THEN LET num=num-65536
8230 GO TO 8290
8240 LET exp=a-128
8250 LET sign=-1
8260 IF e<128 THEN LET sign=1: LET e=e+128
8270 LET mant=e/256+d/65536+c/16777216+b/4294967296
8280 LET num=sign*2^exp*mant
8290 LET n$=STR$ num
8300 RETURN

```

SOME EXPLANATORY NOTES

1. This is to be added to the the tail end of a "budget boot" program which appears with "budget.CC" on the library copy.
2. The boot should be modified to allow the user to select this "printout" routine which starts at line 8000.
3. Line 8000>>OUT 127,15 switches print mode to condensed; POKE 23658,8 turns on caps; there are four choices of spreadsheets as shown.
4. Line 8002 sets up "lprint.C1"
5. Line 8003 sets variable "tflag" used later.
6. Line 8010 opens the print stream and channel.
7. Lines 8030 to 9043 set variables "first" and "last" to values determined from the TIMACHINE listing of runtimes and variables.
8. Line 8045 sets variable "cat" to 1 (This is used to print the categories).
9. Lines 8050 to 8110 and 8190 to 8300 are the heart of the conversion routine to make decimal numbers out of the floating point numbers.

Bob Mitchell
871012

POKING AROUND ! by Douglas Jeffery

I have been collecting all sorts of pokes, hints, maps, and other information for the Spectrum and TS2068. I have finally gotten most of of it sorted out, and want to pass some of it on. Most of it is for the Spectrum, but the 2068 codes shouldn't be to hard to find. If you want some more info on the game hacks, or have some of your own, please contact me. I also collect hints, etc. for Adventures.

Write to: Larch Rd., R.R.#1, Telkwa, B.C. V0J 2X0
I am always looking for more Hacks.

POKE 23609,100 = Beep at each key touch.

POKE 23692,255 = Auto Scroll (used in program)

POKE 65536-USR 7962 = Free

POKE 23756,0 : ENTER : ENTER = Puts first line into line 0.

POKE 23756,n = Puts line 0 into line (n).

POKE 23617,236 = Prints '?' as cursor for inputs.

POKE 23755,100 = Listings disappear.

POKE 23755,0 = Listings reappear.

POKE 23658,8 = Caps Lock.

RAND USR 1331 = Exploding Border

RAND USR 51211 = Restarts Flight Simulator after NEW or STOP.

RAND USR 3280 = Scrolls whole page up one line.

RAND USR 3652 = Clears bottom half of screen.

RAND USR 3330 = Scrolls whole page up to line 1.



Translation of a Z88 review that appeared in the November 1987 issue of the French magazine "Science & Vie Micro"

Clive Sinclair is back. The man, who from 1980 to 1986, sold 5 million of his small revolutionary computers, resurfaces after a year long trek across the barren desert. Out of his bag of tricks emerges a machine that, at first glance, looks unimpressive. It is distributed in a few British boutiques and destined for a stagnant market; that of the notebook (briefcase) computers in which only Tandy still carries a model. Is Sinclair a loser? Look very closely: the Z88 is stunning!

Former prodigy of English industry, knighted by the Queen, a confidant of Margaret Thatcher, Sir Clive Sinclair saw his glory vanish one day in April 1986 when he signed away the Sinclair trade name to his great rival, Amstrad. By the same stroke of the pen, Sinclair bade farewell to the 5 million computers he had sold (ZX80, ZX81, ZX Spectrum, and QL), and numerous but financially catastrophic projects (pocket TV, electric car, etc.).

Today, the remains of Sinclair Research are splintered into three firms: Anamartic, which does the research on Sinclair's wafer chips; Shayle Communications whose concern is the cellular telephone market; and finally Cambridge Computer to which we owe the Z88 and which inherited an old project of Sir Clive known under the codename Pandora.

The Z88 is a notebook computer. It's sole competitor is the Tandy 102, launched in France in July 1986, which was an updated version of the Tandy 100 that appeared in January 1984. The 100, along with the NEC PC 8201 and the Olivetti M10, which has since disappeared (these three machines were made in Japan by Kyocera), were the first to set the standard for this new type of computer: small size, lightweight, self-sufficient, integrated software, non-volatile memory, possibility of transferring data to an office computer. The targetted users: students, journalists, writers, and in general, anyone who has to take notes or do complex calculations anywhere he or she may be located. Expensive, the new machines suffered from insufficient memory. In 1984, the NEC PC 8201 with 64K memory cost 12,356 Francs. The only one still being marketed today is the Tandy 102, at 3,295 Francs, with 24K of RAM, expandable to 32K! Standard features of earlier days.

With the Z88, Clive Sinclair therefore had to come up with some innovations. At first glance, it looks quite trite; an 8-bit Z80 MPU, 32K of RAM, a liquid crystal display, in other words, nothing to get excited about. Taking a closer look, though, the machine surprises; first of all by it's dimensions. While it shares the same desk space as the Tandy (the size of an A4 sheet), it is one-half the thickness of the Tandy; only 2 cm. thick. As for weight, the Tandy is twice that of the Z88: 900 gr. for the Z88 vs 1.8 Kg. for the Tandy. Consequently the Z88 can easily be carried inside a briefcase with room to spare for other items. But it is it's technical features that stun the most; RAM is expandable to 3 Mb, the 128K ROM contains real integrated software to which is added a BASIC and multiple utilities, a high quality LCD

screen, a remarkable operating system and the whole machine is loaded with gadgets. Considering such features, the price of the machine seems to be reasonable: about 2,500 Francs (250 Pounds)

Without giving the impression of colossal strength, the black plastic case of the Z88 is well finished. The keyboard, which will make former Sinclairists smile, is surprising: a continuous washable rubber sheet of moulded keycaps, which are in turn made of rubber. Once you get over this first surprise, the feel of the keyboard is, contrary to what one would expect, pleasing and as an added feature, perfectly noiseless. The LED display, which lies flat, is very readable in spite of the small size of the characters. The "supertwist" LCD screen is manufactured by Epson and displays 8 lines of 108 characters. An adjustment for contrast is located on the left side of the case, along with the external power jack and a miniature reset button, not easily accessible (which is a plus). On the right side is the Z80 expansion bus and an RS232 connector. Located under the computer is a compartment to fit four 1.5-volt batteries, which will last about 20 hours of continuous operation, plus a retractable stand for positioning the machine at an angle on a desk. In one corner of the bottom of the case one can spot the grill for the speaker which is used as an error signaller, a programmable alarm, or to provide a click to the keyboard for those who can't stand the agony of silent typing.

The Memory Of An Elephant

However the largest connectors on the Z88 are located along the front edge just underneath the keyboard; a transparent plastic flap protects the three memory cartridges that can be inserted. For the moment, Cambridge Computer is only marketing the 32K and 128K RAM cartridges (which makes it possible to increase RAM up to a maximum of 416K) plus EPROM cartridges of the same size. These EPROM cartridges correspond to the only mass memory of the machine since they can only be erased with an EPROM "eraser". Only the third slot can accept an EPROM. No problem with the RAM cartridges though; not as safe as the EPROMS (RAM must be continuously powered) they have the advantage of being able to be instantly updated and allow processing of large documents, as we'll see later. These cartridges are energized by the computer batteries (one year if the machine is not used), and are protected by a condenser that maintains power when changing batteries in case an external power supply is not available. Cambridge Computer has promised RAM and EPROM cartridges of 1 Mb which will extend memory to 3 Mb! This is a world record for the Z80, a CPU which, let's remember, is only capable, in theory, of addressing 64K of memory!

The management of this colossal memory is one of the Z88's strong points. To accomplish this, 2 operating systems are incorporated. The first one, traditional, treats each cartridge as a volume similar to a discrete on a PC. The files can be organized heirarchically and manipulated within this volume, through directories and sub-directories. The only limitation is the size of the volume: 32K, 128K, or 1 Mb. The second operating system considers the whole available memory as one volume. In the case of a 416K

configuration, for example, the whole memory can be used for one file, under the condition of course, that no other file has been protected by the first op-system. In case of the latter, the available memory will be reduced accordingly.

Furthermore, the Z88 utilizes this working memory to allow storage of up to 10 documents at a time, be they word processor, BASIC, diary, etc. This complex memory management, which is completely user-transparent, has 2 advantages. The first one is to permit two levels of record archiving: in mass memory for suspended applications, and in working memory for current applications. Second advantage; a 2-level protection. In case of a reset (as when a BASIC program has locked up the system) the current applications will be irrevocable lost, but not the files.

Switching on the Z88 is done by pressing both shift keys simultaneously. The initial display, named "index" produces two menus. One shows the listing of the system applications, while the other lists the names of the suspended applications along with the date and time of the suspensions and the file name.

The cursor keys allow the direct selection of the required application or file. Of all the software contained in ROM, the big daddy is Pipedream, a wholly integrated utility that assumes the multiple tasks of wordprocessor, spreadsheet, and database. Very powerful and equipped with comprehensive features found only in larger machines, Pipedream carries an incredible number of commands and options. It's basic working structure is the spreadsheet regardless of the document that one wants produced. Whether it be text, a calculation, or an address file, Pipedream recognises only one format for it's data; that of the spreadsheet. This has an enormous advantage; one single application can very simply intermix the three applications. Furthermore, the formatting of a document is greatly simplified; each column of the spreadsheet has it's own margins. It is therefore possible to present text in multiple columns.

The theoretical size of a document is limited by the number of columns, 64 (A to BL) and by the maximum number of characters that each cell can hold, 255; the number of lines being only limited by the size of the memory. In terms of a database, we can say that in Pipedream, an entry could have 64 fields of 255 characters, each field corresponding to one cell and each entry corresponding to a line. Some thing for word processing which would allow 64 columns of 255 characters!

Integrating the different applications in a single document does not present any problem as each cell of the spreadsheet can be reserved for one type of data. Also, a field indexed to a calculation cell can be incorporated into a line of text. There is only one restriction; Pipedream does not allow indexing fields between files.

Besides Pipedream, the Z88 is equipped with a BASIC, the Z80 version of BBC BASIC and other minor software which is in reality the "office accessories" part of the system; a diary that can be used as a simplified wordprocessor; a calendar that can be linked to the diary to remind you of certain important days; a clock with a very elaborate programmable alarm,

capable of beeping and automatically start up an application as many times as you wish at regular intervals (one year, one month, one week, down to one second); a calculator with a conversion table (litres-gallons, kilometers-miles, etc); a communications utility (emulating the VT 52 terminal);

a control panel allowing the setting of system parameters (baud rate of the RS232, date format, memory cartridges, and current directories, etc.)

Finally the Z88 has two more important utilities: The first one, Filer, is the command program of the op-system. Easy to use, it allows the execution of operations on the files held in memory: copy, rename, delete, create a directory, etc. The second one called Import/Export is a simple idea for the first time simply achieved. This utility allows the transfer of Pipedream files to other computers which is the main *raison d'être* of a notebook computer. For the moment only a kit earmarked for the IBM PC is available. This kit is made up of an RS232 cable and a 5 1/4 inch disk containing the transfer software, plus conversion utilities to translate the Pipedream format to the Wordstar and 1,2,3 formats. Conversion and transfer can, of course, be accomplished in both directions.

When it comes to the general efficiency of the entire Z88 software, the programmers at Cambridge Computer put to excellent use the apparent constraints that an 8 line LCD display imposes. (Cambridge Computer is made up of 3 British firms grouped under one common banner, Trinity Concepts). The menu key gives access, by successive keystrokes, to the entire set of options in each program, via a superimposed window while at the same time dimming the current application on the screen. Furthermore, each option is activated by a combination of one keystroke plus the "diamond" key. The "square" key allows you to call any program in memory without quitting your current application. A final luxury; a square window located to the right of the current document. Each character of the main window being represented by one screen pixel. A sort of WYSIWYG, if you want...

Crossing The Channel

Clive Sinclair's return is being carried out, on the technical side, under the best of auspices: the Z88 is a little computer that is original, exciting, perfectly executed. The problem is that Sir Clive is really starting over from the bottom of the ladder. Selling the Z88, for the moment, only in Great Britain through two chain stores. For France, nothing is being planned at the present time. We can only hope that some importer will be interested under the condition he Frenchified the machine; the QWERTY keyboard could be tolerated if the Z88 was capable of displaying the accentuated characters, which is not the case.

Is there a risk that the Z88 will join the QL in the realm of genial but unsold products? What does Sinclair say? Apparently his trip through the desert has neither destroyed his industry captain's faith nor his taste for shattering pronouncements. Last September he adventured: "the Z88 will in 18 months be the world's best selling computer!"

Translation by Lawrence Chavarie.


```

5 REM By Renato Zannese
10 REM 2068 Screen Copy For
20 REM Gemeni 10X printer
25 REM To copy =>
30 REM RANDOMIZE USR 24320
40 FOR a=24320 TO 24320+140
50 READ x
60 POKE a,x
70 NEXT a
100 DATA 205,083,095,001,000
105 DATA 175,038,026,104,069
110 DATA 022,007,229,245,197
115 DATA 062,175,144,063,048
120 DATA 010,205,009,038,071
125 DATA 004,126,007,016,253
130 DATA 031,203,020,193,241
135 DATA 203,028,225,023,005
140 DATA 021,032,255,230,127
145 DATA 205,065,095,012,032
150 DATA 214,062,010,205,065
155 DATA 095,037,040,070,205
160 DATA 108,095,024,200,000
165 DATA 245,205,009,032,056
170 DATA 002,241,201,219,127
175 DATA 203,103,032,243,241
180 DATA 211,127,201,062,027
185 DATA 205,065,095,062,077
190 DATA 205,065,095,062,020
195 DATA 205,065,095,062,027
200 DATA 205,065,095,062,049
205 DATA 205,065,095,062,027
210 DATA 205,065,095,062,075
215 DATA 205,065,095,062,000
220 DATA 205,065,095,062,001
225 DATA 205,065,095,201,062
230 DATA 027,205,065,095,062
235 DATA 064,205,065,095,201
990 REM
999 PRINT #4: SAVE "Copy.B1"

```

```

5F00 CD535F CALL 5F53
5F03 0100AF LD BC,AF00
5F06 261A LD H,1A
5F08 68 LD L,B
5F09 45 LD B,L
5F0A 1607 LD D,07
5F0C E5 PUSH HL
5F0D F5 PUSH AF
5F0E C5 PUSH BC
5F0F 3EAF LD A,AF
5F11 90 SUB B
5F12 3F CCF
5F13 300A JR NC,+10 >5F1F
5F15 CD0926 CALL 2609
5F18 47 LD B,A
5F19 04 INC B
5F1A 7E LD A,(HL)
5F1B 07 RLCA
5F1C 10FD DJNZ -3 >5F1B

```

```

5F1E 1F RRA
5F1F CB14 RL H
5F21 01 POP BC
5F22 F1 POP AF
5F23 CB10 RR H
5F25 E1 POP HL
5F26 17 RLA
5F27 05 DEC B
5F28 15 DEC D
5F29 20FF JR NZ,-1 >5F2A
5F2B E67F AND 7F
5F2D CD415F CALL 5F41
5F30 0C INC C
5F31 20D6 JR NZ,-42 >5F09
5F33 3E0A LD A,0A
5F35 CD415F CALL 5F41
5F38 25 DEC H
5F39 2846 JR Z,+70 >5F81
5F3B CD6C5F CALL 5F6C
5F3E 18C8 JR -56 >5F08
5F40 00 NOP
5F41 F5 PUSH AF
5F42 CD0920 CALL 2009
5F45 3802 JR C,+2 >5F49
5F47 F1 POP AF
5F48 C9 RET
5F49 DB7F IN A,(7F)
5F4B CB67 BIT 4,A
5F4D 20F3 JR NZ,-13 >5F42
5F4F F1 POP AF
5F50 D37F OUT (7F),A
5F52 C9 RET
5F53 3E1B LD A,1B
5F55 CD415F CALL 5F41
5F58 3E4D LD A,4D
5F5A CD415F CALL 5F41
5F5D 3E14 LD A,14
5F5F CD415F CALL 5F41
5F62 3E1B LD A,1B
5F64 CD415F CALL 5F41
5F67 3E31 LD A,31
5F69 CD415F CALL 5F41
5F6C 3E1B LD A,1B
5F6E CD415F CALL 5F41
5F71 3E4B LD A,4B
5F73 CD415F CALL 5F41
5F76 3E00 LD A,00
5F78 CD415F CALL 5F41
5F7B 3E01 LD A,01
5F7D CD415F CALL 5F41
5F80 C9 RET
5F81 3E1B LD A,1B
5F83 CD415F CALL 5F41
5F86 3E40 LD A,40
5F88 CD415F CALL 5F41
5F8B C9 RET

```

GAME HACKS

Manic Miner (Bugbyte) - Tape when game is running 6031769.

(Software Proj.) Type TYPEWRITER. A boot will appear at the bottom of screen. Then hold down 9 and press a combination of keys to jump to rooms. (9-1) (9-13) (9-1234) Write for complete list.

Space Harrier - In trainee mode, select keys as normal and when you return to the main menu type CHEAT3F869 and the game starts with you invincible.

Highlander - Kneel down and keep a high block so that your opponent loses energy when he hits, not you.

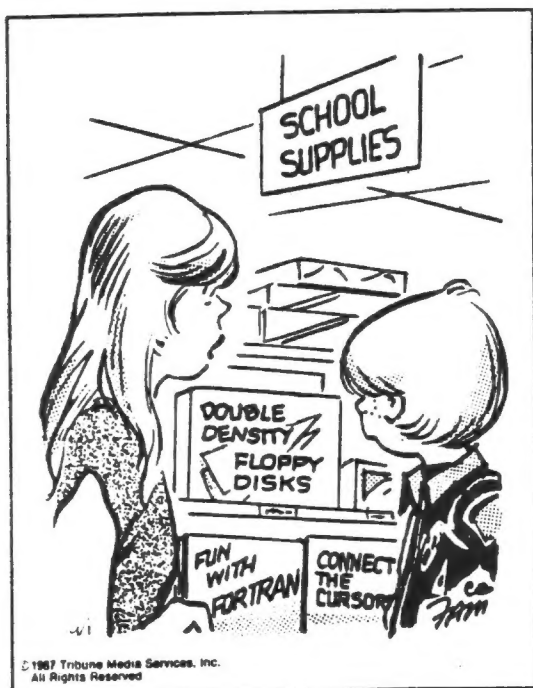
Martinoids - Merge Loader and add POKE 46926, 127: POKE 42812, 0: POKE 42815, 0 before the RAND USR statement.

Nemesis - Merge loader and enter 56 POKE 51479, 1 and you're indestructible.

Sweevo's World - POKE 33219, 0 for Infinite lives.

I have quite a lot of pokes, hints, and some maps for games and adventures. If you want help with anything or if you have anything to share, please contact me. If there is enough interest, I will try to make a regular column for the newsletter.

Douglas Jeffery



"What happened to the cigar box filled with scissors, paste and crayons?"

Sinclair Monitor Battery Source WA6DLI

Are you wondering how to power the small Sinclair TV set which can be used as a monitor now that Polaroid has quit making the Pola-Pulse and Pola-Pack batteries? (Or at least took them out of their catalog the dealers have.)

Here is information on how to get replacement batteries from those empty cartridges from you Polaroid 600 and Spectra cameras. If you carefully open the plastic frame, you can extract the flat Polaroid battery, which is hardly used when just a pack of film has been shot. (Unless you let your film lie in the camera for two years at a time!)

This battery pack is very powerful and is 6 volts. Turn it over to see the cutouts in the cardboard where the round metal surface is exposed to make contact with the camera feelers. Holding the pack so the holes nearest the top edge are away from you, the right hole is plus (+), although not marked. Mark it now for reference.

You could make a holder with feelers to contact the two spots and a battery eliminator plug wired to the feelers, and operate transistor radios, small TV's like the LCD ones Radio Shack sells, or anything that runs on multiples of 6 volts. With diode protection, a back up for the ZX 81 or T/S 1000 to hold memory if power fails could be built.

Best of all, if you peel the cardboard away on the left or negative (-) contact about an inch, you can duplicate the pattern of the Pola-Pulse or Pola-Pack battery contacts and use the discard from the film pack in those applications that use the Pola-Pack, notably the Sinclair Pocket TV. You also trim the cardboard sides to the width of the narrow top piece! As long as you take pictures or know someone who does, you will have free batteries!

TS BULLETIN

The two pages in our newsletter filled full of Timex sources and facts come from a newsletter published by Bill Harmer, of Ottawa. His newsletter, the TS BULLETIN, is published monthly (well, almost), and is produced single-handedly by Bill. We have recently started exchanging newsletters with him.

Bill is a member(?) of the Ottawa-Hull Timex/Sinclair User Group, which put out their own newsletter, infrequently. G.F.C.

From the TS BULLETIN, published by Bill Harmer

Meetings, News and Notes

The January meeting of the Ottawa-Hull Timex/Sinclair User Group (mailing address, c/o Mike Dove, 2161 East Acres Rd., Gloucester, Ont. K1J 9A6, Canada) saw about a dozen members attending and featured a demo by the President of the Disciple, accessory board for the Spectrum/TS2068 as well as a new style accessory keyboard for the TS2068 produced for sale by member John Mathewson....John Mathewson also mentioned that he would be willing to assist members or other user group owners of the TS2068 in the repair of their computers as a sideline in order to avoid having to send them to the U.S. with its attendant customs clearing problems. This has arisen due to the fact that Timex in the U.S. South is no longer repairing them. John's mailing address is: 1852 Appleford St., Gloucester, Ont. K1J 6T4, and his phone is area code 613, 746-7869. Unfortunately since he has not been able to obtain a supply of all of the different custom chips used in the TS2068, some problems of the TS2068 that involve these chips especially the SCLA chip, can not be fixed through him. If you have any information about sources of chips or new or used TS2068's (the latter at a low price) he would also be interested in hearing from you....There is a rumour circulating that new, surplus TS2068's are available still for about US\$85. from Brooklyn Closeout Corp., 167 Clymer St., Brooklyn, N.Y. 11211, U.S.A. A price of US\$130 adds to it a TS2040 printer, two cartridges and three cassette tapes.... For those who have a WAFADRIE for their Sinclairs a recent notice that the cartridges are no longer available has been followed by a rumour that Smith-Corona uses the cartridges in some models of their typewriters and so they may still be available through that firm....The ZX-81 clone from the orient was being sold very cheaply by Addison Electronics, Ltd., 8018, 20e Avenue, Montreal, P.Q. H1Z 3S7. A tip for those who may buy one—the power supply has the opposite polarity that you might expect and using a TS2068 power supply will ruin the computer. Also there is reputed to be a lot of hum on the cassette interface which makes the cassette interface cantankerous or impossible to use. Possible fix:- use a good 12 volt power supply rather than the 9 volt used for the ZX-81.There are also rumours that Fred Nachbaur of Silicon Mountain Computers, C-12, Mtn. Stn. Group Box, Nelson, B.C. V1L 5P1, Canada is working on an improved PC8300 ROM.....Z-88 in Canada? Sinclair's new Z-88 laptop which though it uses a Z-80 microprocessor can handle IBM PC files, introduced in the U.K. and more recently in the U.S. apparently will not be marketed in Canada. It features an 8 line LCD display and is available in the U.S. for about US\$500. Its BASIC (BBC BASIC) is not compatible with the BASIC used in the other Sinclair computers like the ZX-81 or TS2068/Spectrum.SyncWare News, a newsletter for the TS2068 and with some coverage of the ZX-81/TS1000/TS1500 is still publishing. Subscriptions are US\$19.95 in Canada, and reprints of its first volume of issues that dealt with the ZX-81/TS1000 are available for US\$19.95 too. Write, SyncWare News, P.O. Box 64, Jefferson, NH 03583, U.S.A.....A new newsletter TS2068 SAFE DISK UPDATE for owners of the TS2068 Oliger disk system for the Sinclair cost \$15 (U.S.) for four issues a year and are available from 1317 Stratford Ave., Panama City, FL 32404, U.S.A. They may also cover disk systems other than the Oliger SAFE system.....Fontman is a TS2068 program for varying the fonts of type on the screen or printer when using a TS2068. For further information contact Jack Dohane, 390 Rutherford Ave., Redwood City, CA 94061 U.S.A. Two libraries of 20 fonts each are included with the program altho the number of possible different fonts are unlimited....Canadian QL programs are available from Meta Media Productions, 726 West 17th Street, Vancouver, B.C. V5Z 1T9, Canada. Products include a machine code monitor on EPROM and a modem program Q_LINK as well as a fractal graphics generator program. Prices run in the \$20 and up range....Larken Electronics is working on a

Meetings, News and Notes (Continued)

fast RAM disk for the TS2068. It requires one to have the Larken DOS system. Available now ---- For further information write: Larken Electronics, RR#2, Navan, Ontario, Canada K4B 1H9. Larken markets a line of disk drive interface products for the TS2068 and even the ZX-81/TS1000. A new DOS to replace the DOS in Aerco, Ramex, Oliger, and previous TS2068 Larken systems is now available in cartridge form from about \$65....A program to verify the typing of ZX-81/TS1000 listings by using a checksum has been published in the December issue of the Ottawa-Hull Timex-Sinclair User Group newsletter, available through that group (see address on previous page). The newsletter also listed a program for the TS2068 for the game Othello. It will also run on the ZX-81/TS1000.... If you find any old ZX-81/TS1000's cheap, even with non-working keyboards snap them up. There is a small market for them used and several requests for ones for the Toronto User Group have been received. The address: Toronto Timex-Sinclair Users' Club, c/o George Chambers, P.O. Box 7274, Station 'A', Toronto, Ont. M5W 1X9. They also accept out-of-town memberships. Its fee is probably the \$20 of most user groups.... Mark Smith of Quantum Computing is experimenting with the development of a 68020 expansion board for the QL. It makes the QL faster than a Macintosh. The 68020 is a full 32-bit microprocessor as compared to the QL's built in 68008 which is a 32-bit/8-bit microprocessor. A talk was given at the Long Island User Group in New York in the fall on this work in progress....The Long Island Sinclair Timex User Group, P.O. Box 438, Centerport, N.Y. 11721-0438, U.S.A. also has a series of cassettes with TS2068 programs on them (as many as fifty per cassette) available for swap with other user groups or for members-\$15 dues+\$6 ea. Seven cassettes have been produced in the series. For further info write or phone 1-516-791-6247 (Harvey Rait)....The Johnson City New York ~~TS~~ also preparing a series of swap cassettes. Their address is: SINCUS, 1229 Rhodes Road, Johnson City, N.Y. 13790, U.S.A. If we are to continue getting new programs for our computers the user groups are the logical source of leads as suppliers close or drop the Timex/Sinclair line. They also sell the cassettes for a nominal sum....The setting up of local Sinclair B.B.S. so that local groups can have a number to call with their modem attachments is also proceeding in many localities. The Indiana Sinclair Timex Users' Group, 513 East Main St., Peru, Indiana 46970, U.S.A. has had one such system working successfully using a TS2068. Any groups planning to set up such a system might wish to contact them and see if they have any ideas about the sort of program to use....While on the subject of B.B.S. activity, the Computer Shopper provides many numbers of B.B.S. locations so that they are a good place to start if you get a modem and are willing to call long distance....TOPS, Timex disk drive newsletter seems to have resumed publication. Write: Ron Havlen, 4307 Chambers Rd., Horsehead, N.Y. 14845 U.S.A....Beta BASIC the programmers' BASIC for the Spectrum emulated TS2068 includes windows and solves many of the frustrating problems that occur with the TS2068 built-in BASIC £15 from Beta Soft, 92 Oxford Rd., Moseley, Birmingham, B13 9SQ, England, and a tutorial tape on Beta BASIC is available for US\$5 plus mailing from Robt. Hartung, 22416 No. County Line Rd., Hunteertown, IN 46748, U.S.A....Dan Elliot, Rt.1, Cabool, MO 65689, U.S.A. is offering a repair service for TS2068, TS1000, TS1500, ZX-81 and QL as well as RAM packs. He also does hardware modifications and upgrades. Phone him at 1-314-739-1712 (eves. Sun. to Thur.) first....QL 512K RAM cartridge is available from Matt Zenkar, P.O.B. 12534, Rochester, N.Y. 14612, U.S.A. for about US\$140....E.Arthur Brown Co., 3404 Pawnee Dr., Alexandria, MN 56308, U.S.A. offers the TIMachine BASIC compiler for the TS2068 for US\$19.95, TS1000 Masterscribe wordprocessor with font choice for \$14.95, and Pixel Print desktop publishing graphics for the TS2068 at \$19.95. The Blue Thunder helicopter flight simulator for the TS2068 is at \$16.95 and the TS2040 printer is still available for US\$34.95. Misc. ZX-81 cassettes are \$10 for five. Super Hot 'Z' for the TS2068 has been marked down to US\$14.95.

BANNERS IN COLOUR

By Jeff Taylor

In the past three issues of Sinc-Link I've written reviews about the McMichael interface and the useful utility programs Mr. McMichael has created to drive the 1520 colour plotter/printer.

His latest program is called "Bannerific" and as the name implies, the user can create eye-catching banners in a variety of lengths, widths and colours.

Bannerific enables you to construct four-colour horizontal or vertical banners with your choice of character size (from about 1/8" high to almost 4" high) and your selection of one of three built-in fonts (or load in your own font set). Also included are the standard graphic characters and McMichael's own UDG set (see below). Proportional spacing is an option too.

Up to two hundred characters can be printed in one string and each one can be one of four colours (blue, black, red or green), inverted and/or overlaid.

This is quite a versatile package and if you use the interface/printer combination then Bannerific is definitely a useful addition.

For more information contact:
Mr. John McMichael
1710 Palmer Drive,
Laramie, Wyoming, USA, 82070

McMichael UDG's



Questions

Questions

1. Does anyone have back issues of ELEKTOR, ETI, PRACTICAL ELECTRONICS or ELECTRONICS MONTHLY (UK magazines)? Articles on Sinclair computers are of special interest (for obvious reasons)!
2. For any of the Sinclair machines, what is Ramtop? Where is Ramtop? What does it do? And how can it be changed (ie raised or lowered)?
3. How are the advanced graphics modes in the 2068 accessed?
4. What can be done to eliminate the hum on tapes that have been SAVED? (especially ZX81 tapes)

Do you have a question about TS computers? ASK US!

Do you have an answer to a question? TELL US!

Send your questions and responses to the Sinc-Link editors, these will be printed in the following issue.

Answers

DEMONSTRATIONS

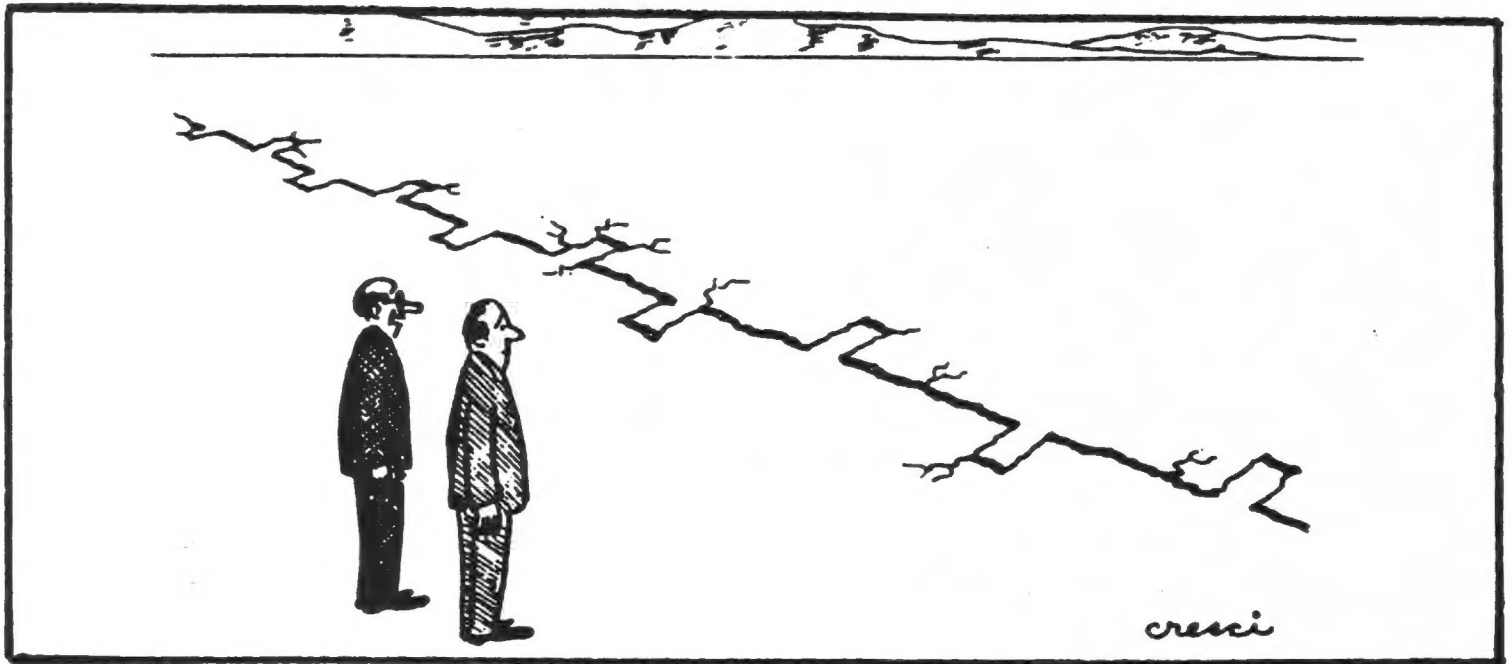
Schedule of Demos at Club Meetings

April 6 -Speech Board- the 2068 talks!

May 4 -Swap Meet- "Swap and Sell"

June 1 -QL Demo- Quanta Library

In addition to the theme demonstrations (ZX81, TS2068, QL), we would like to present new items, games or anything of interest to the club membership. To do that, however, requires that you, the club members, come forward with ideas or demos. How about it?



'We're Witnessing a Geological First,

— A Digital Fault!'

Postmaster, if Undelivered Return to :

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P. O. Box 7274 Sin. A
Toronto, Ont., M5W 1X9
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